National Park Service
U.S. Department of the Interior
Pacific Coast Science and Learning Center
Research Project Summary August 2007

# Habitat Assessment of Myrtle's Silverspot Butterfly at Point Reyes National Seashore

## The Question: *Are dunes and grasslands grazed by cattle adequate habitat for the endangered Myrtle's silverspot butterfly?*

John Hafernik

**Myrtle's silverspot butterfly is a federally endangered species that inhabits coastal dunes and grasslands at Point Reyes National Seashore. Prior to this research, no formal studies had addressed how cattle grazing might affect the butterfly populations.**

Myrtle's silverspot butterfly (*Speyeria zerene myrtleae*) has been listed as a federally endangered species since 1992. Once found from San Mateo County north to the mouth of the Russian River in Sonoma County, it is now known to occur in four populations, two of which are in Point Reyes National Seashore. Myrtle's silverspot butterfly inhabits coastal dunes, prairies and scrublands up to 1000 feet above sea level and as far as three miles inland. Habitat loss and degradation is the main threat to species survival.

Grazing has the potential to degrade the two kinds of plants crucial to the butterfly's lifecycle - nectar sources and larval host plants. Myrtle's silverspot butterflies can obtain nectar from a variety of native and non-native plants, but has only one larval host plant, the western dog violet (*Viola adunca*). No formal studies have assessed whether cattle grazing impacts the distribution and abundance of these plants, even though cattle grazing occurs across much of the current range of the Myrtle's silverspot population. Determining the answer will guide future management practices in Myrtle's silverspot habitat.

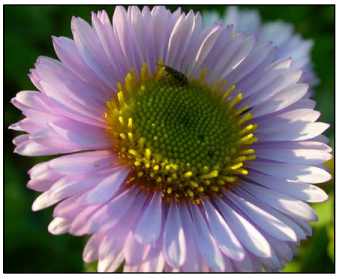
## The Project: *Compare 1) the plants crucial to the lifecycle of the Myrtle's silverspot butterfly and 2) the numbers of Myrtle's silverspot butterflies seen between grazed and ungrazed dunes and grasslands. Record what plants the butterflies use as nectar sources.*

The Center for Conservation Biology at Stanford University monitored the distribution and abundance of Myrtle's silverspot butterfly almost yearly from 1992 to 1998 and in 2001. In 2002, biologists from Point Reyes National Seashore expanded the monitoring and began a habitat assessment to address whether grazing affects the nectar sources and the larval host plants for the Myrtle's silverspot butterfly.

© Christopher L. Christie

**Female Myrtle's silverspot butterflies lay their eggs near the dried stems and leaves of western dog violets (*Viola adunca*). Larvae are only able to eat the leaves of violet plants.**

For the assessment, biologists compared nectar sources and larval host plants between grazed and ungrazed dunes and grasslands, and then surveyed for the distribution of butterflies in the Seashore. Vegetation and butterfly surveys were conducted June through September in 2002 and 2003. In grazed and ungrazed areas, they measured the species richness (number of species), rough distribution and density of nectar sources and the density of the larval host plant along vegetation transects. During butterfly transects, they recorded the location of any Myrtle's silverspot butterfly and also determined how often the butterflies used native and nonnative plant nectar sources.



© Br. Alfred Brousseau, Saint Mary's College

**Myrtle's silverspot butterfly adults seek nectar most frequently from these plants: From top to bottom, *Monardella undulata*, *Grindelia* spp., *Erigeron glaucus* and *Abronia latifolia*.**

## The Results: *Dunes and grasslands grazed by cattle may be adequate habitat for the Myrtle's silverspot butterfly. Future monitoring will determine trends in abundance in grazed and ungrazed habitats over time.*

At the Seashore, Myrtle's silverspot butterfly and cattle have co-existed for over a hundred years, and the results of this study suggest that cattle grazing in the study plots does not have a significant detrimental effect on the butterflies. Between grazed and ungrazed areas, the nectar source species richness did not differ, and the density of nectar sources was actually higher in grazed areas. Biologists recorded more butterflies in grazed dunes and grasslands than in ungrazed vegetation communities during their transects. They noted that the butterflies nectared off of some unexpected non-native species like false dandelion (*Hypochaeris radicata*), an abundant plant in the grasslands. However, the butterflies primarily used native nectar sources. Curly-leaved monardella (*Monardella undulata*), a rare native plant, is an important nectar source - biologists recorded Myrtle's silverspot butterflies nectaring from this plant twice as often as from any other nectar source combined. While grazing does not seem to impact the number of available nectar sources, the quality of the nectar sources may still differ between grazed and ungrazed areas. There were few western dog violets in the transects, so the study could not address whether grazing affects the larval host plant.

Future research should examine the distribution of the larval host plant in grazed habitats. Experimental studies should test the short and long-term effects of different timing and intensity levels of cattle grazing, mowing and burning on the violets. Currently, park staff are planning a biannual Myrtle's silverspot butterfly monitoring program at Point Reyes National Seashore.

## Additonal Resources

Pacific Coast Science and Learning Center: Science Behind the Scenery DVD
(Available by request through the Pacific Coast Science and Learning Center)

Adams, D. 2004. Habitat assessment of the endangered Myrtle's silverspot butterfly. M.S. Thesis. San Francisco State University.

**During the Myrtle's silverspot flight season of June through September, biologists walked vegetation transects. Along each transect, they measured the number and density of plants that the butterflies drink nectar from.**